USGS

WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2003MS16B

Title: Improved Estimation of Nutrient and Pesticide Runoff Losses from Golf Courses and Residential Lawns in the South Atlantic-Gulf Region

Project Type: Research

Focus Categories: Non Point Pollution, Water Quality, Surface Water

Keywords: water quality, rainfall-runoff processes, fertilizers, pesticides, nutrients

Start Date: 03/01/2003

End Date: 02/29/2004

Federal Funds Requested: $15000.00

Matching Funds: $30034.00

Congressional District: Third

Principal Investigators: Massey, Joseph H.

Abstract: The Mississippi Water Research and South Atlantic-Gulf Region Water priorities addressed by this project are: the measurement and protection of surface water quality from nutrient and pesticide contamination (Water Quality), and predicting the rates of movement and concentrations of nutrients and pesticides to surface waters (Contaminant Transport Mechanisms). Turfgrass is the most intensively managed biological system in metropolitan areas. Currently, over 40 million acres of turf are estimated to be growing in the U.S. If the areas of the approximately 15,0000 golf course were combined, they would encompass an area larger than Delaware and Rhode Island. An average of 350 new or expanded golf courses have opened each year since 1990, each averaging 150 acres. Following the national trend, turf acreage in Mississippi is expanding at a steady pace. Mississippi currently has an estimated 800,000 residential lawns comprising 300,000 acres and over 2,500 athletic fields. These figures do not include turf maintained at city parks, schools, churches, cemeteries, airports and industrial/commercial sites. An estimated 170 golf courses (ca. 15,000 A) and 175 sod farms (ca. 5000 A) are currently in operation in MS. In addition, about 2 million A of highway roadsides are maintained in Mississippi, a significant portion of which are treated with one or more herbicides each year. Turf-related agrochemical spending is expected to continue growing at 5.5% per year to 6.2 billion dollars by 2006. Unlike turf professionals,

homeowners tend to apply more chemical than is necessary for effective results. As a result, the use of pesticides by homeowners may be as high as 5 to 10 lbs. per acre, almost ten times more chemical per acre than is used by farmers. The intensity of pesticide and nutrient use, coupled with the anticipated continued growth in turf acreage, suggests that concerns over the impacts of turf chemicals on surface water quality will likely increase over time. Unfortunately, current models used to estimate nutrient and pesticide runoff from managed turf are not accurate, making it difficult to allocate between different sources of agricultural and non-agricultural contamination and to assess overall turf impacts on water quality. This project is designed to improve the estimation of nutrient and pesticide runoff from warm-season turf managed according to conditions found on golf course fairways and residential lawns.

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